

GenCore version 5.1.3
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OM nucleic - nucleic search, using sw model

Run on: February 16, 2003, 15:49:44 : Search time 215.94 Seconds
(without alignments)
14704.597 Million cell updates/sec

Title: US-09-497-967-44
Perfect score: 1410
Sequence: 1 atgaaaaataatttagt.....cttattattattatgatga 1410

Scoring table: IDENTITY_NUC
Gapop 10.0 , Gapext 1.0

Searched: 2195239 seqs, 1125999159 residues
Total number of hits satisfying chosen parameters: 4370478

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : N: Geneseq_101002.*
1: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA1980.DAT.*
2: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA1981.DAT.*
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4: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA1983.DAT.*
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11: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA1990.DAT.*
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13: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA1992.DAT.*
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22: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA2001A.DAT.*
23: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA2001B.DAT.*
24: /SIDS2/gcgdata/geneseq/geneseq-emb1/NA2002.DAT.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1410	100.0	1410	21	AAA97060
2	1404	99.6	1404	21	AAA97038
3	1402.4	99.5	1404	21	AAA52136
4	784.4	55.6	1410	21	AAA97089
5	782.6	55.5	1404	21	AAA97040
6	781	55.4	1404	21	AAA97065
7	258	18.3	2486	21	AAA97037
8	254.8	18.1	2811	21	AAA52134
9	252.6	17.9	1326	21	AAA97036

10	251	17.8	1326	21	AAA52135	48 kDa i-antigen g
11	73	5.2	138	21	AAA97075	G5 synthetic gene
12	68.2	4.8	123	21	AAA97076	G5 synthetic gene
13	66.2	4.7	104	21	AAA97072	G5 synthetic gene
14	62.8	4.5	100	21	AAA97073	G5 synthetic gene
15	62.8	4.5	100	21	AAA97080	G5 synthetic gene
16	60	4.3	60	21	AAA97041	Ichthyophthirius m
17	60	4.3	60	21	AAA97042	Ichthyophthirius m
18	60	4.3	1635	22	ABA95946	Human breast cell
19	60	4.3	1635	22	ABA97865	Human foetal liver
20	60	4.3	1635	22	ABA34921	Probe #13387 for g
21	60	4.3	1635	22	AAK16270	Human brain expres
22	60	4.3	1635	22	AAK42016	Human bone marrow
23	60	4.3	1635	22	AAI22780	Probe #12713 for g
24	60	4.3	1635	22	AAI48082	Probe #16768 used t
25	60	4.3	1635	22	AAI08454	Human genome-deriv
26	60	4.3	1635	24	ABS16047	Human breast cell
27	60	4.3	1973	22	ABA44805	Human foetal liver
28	60	4.3	1973	22	ABA55261	Probe #3471 for ge
29	60	4.3	1973	22	ABA35005	Human brain expres
30	60	4.3	1973	22	AAK03514	Human bone marrow
31	60	4.3	1973	22	AAK28970	Probe #3489 for ge
32	60	4.3	1973	22	AAI13556	Probe #3604 used t
33	60	4.3	1973	22	AAI34918	Probe #3437 used t
34	60	4.3	1973	22	AAI03446	Human genome-deriv
35	60	4.3	1973	24	ABS03504	G5 synthetic gene
36	57.6	4.1	117	21	AAA97071	G5 synthetic gene
37	56.6	4.0	95	21	AAA97074	Human dentin sialo
38	56.6	4.0	8201	21	ABA88664	Human dentin sialo
39	56.6	4.0	8201	24	ABQ73537	G5 synthetic gene
40	56.2	4.0	94	21	AAA97079	Mouse ischaemic co
41	55.4	3.9	2215	24	ABT99688	G5 synthetic gene
42	53.4	3.8	95	21	AAA97078	G5 synthetic gene
43	53.4	3.8	10266	17	AAI33007	Mouse SRV-related
44	53.4	3.8	14704	13	AAQ20685	PKS 741 insert con
45	52.6	3.7	92	21	AAA97087	G5 synthetic gene

ALIGNMENTS

RESULT 1
AAA97060
ID AAA97060 standard; DNA; 1410 BP.
AC AAA97060;
XX
XX
DT 18-DEC-2000 (first entry)
XX
DE 55kd i-antigen coding region.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
XX Ichthyophthirius multifiliis.
XX
XX WO200046373-A1.
PN
PD 10-AUG-2000.
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0119634.
PR 02-MAR-1999; 99US-0123272.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLARK/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LINT T.
XX

PI Clark TG, Dickerson HW, Lin T;
DR WPI; 2000-506071/45.
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
PT multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish -
PT
PS Disclosure: Figure 2; 144pp; English.
XX This invention relates to novel i-antigen polypeptide sequences.
CC I-antigens or immobilisation antigens are common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kb. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 1410 BP; 449 A; 240 C; 259 G; 462 T; 0 other;

Query Match 100.0%; Score 1410; DB 21; Length 1410;
Best Local Similarity 100.0%; Pred. No. 1.4e-300;
Matches 1410; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 ATGAAAATAATATTTAGTAATATGATATTCATTTATCAATTAATTAATTAATCT 60
Db 1 ATGAAAATAATATTTAGTAATATGATATTCATTTATCAATTAATTAATTAATCT 60
Qy 61 GCTAATTTGCTGTGGAACTGAACTAACACAGCCGGATAAGTTGATGATCTAGAACT 120
Db 61 GCTAATTTGCTGTGGAACTGAACTAACACAGCCGGATAAGTTGATGATCTAGAACT 120
Qy 121 CCTGCAATTCGTAAATTTGACAAAACCTTTATTAATAAATGCTGCTGCTTCGTT 180
Db 121 CCTGCAATTCGTAAATTTGACAAAACCTTTATTAATAAATGCTGCTGCTTCGTT 180
Qy 181 CCTGGTCTAGTACGTGTACACCTTGCCATAAAAAAGATGCTGGTGCTTAACCAAT 240
Db 181 CCTGGTCTAGTACGTGTACACCTTGCCATAAAAAAGATGCTGGTGCTTAACCAAT 240
Qy 241 CCACCTGCTACTGCTAATTTAGTCACATAATGTAACGTTAAATGCCCTGCTACCGCA 300
Db 241 CCACCTGCTACTGCTAATTTAGTCACATAATGTAACGTTAAATGCCCTGCTACCGCA 300
Qy 301 ATTGCAGGTGGAGCAACAGATTATGCAGCAATATACAGAATCTGTTAATTTGAGAAAT 360
Db 301 ATTGCAGGTGGAGCAACAGATTATGCAGCAATATATACAGAAATGTTAATTTGAGAAAT 360
Qy 361 AATTTTATATGAAATGCTCCAAATTTTAATCAGGTGCTAGTACATGCACAGCTTGT 420
Db 361 AATTTTATATGAAATGCTCCAAATTTTAATCAGGTGCTAGTACATGCACAGCTTGT 420
Qy 421 CCGGTAACAGAGTTGGTGGTCATTTGACTGCTGTAATGCCGTACCATAGTCGCATAA 480
Db 421 CCGGTAACAGAGTTGGTGGTCATTTGACTGCTGTAATGCCGTACCATAGTCGCATAA 480
Qy 481 TGTACGTCGCATGCTTACTGGTACTGCACCTTGTATGATGGAGTAACCTACTGATTATGTT 540
Db 481 TGTACGTCGCATGCTTACTGGTACTGCACCTTGTATGATGGAGTAACCTACTGATTATGTT 540

Qy 541 AGATCATTACAGAAATGTTAAATGTAGACTTAACTTTTACTATATATGTAATAATGTT 600
Db 541 AGATCATTACAGAAATGTTAAATGTAGACTTAACTTTTACTATATATGTAATAATGTT 600
Qy 601 AATACTCCTTTCAATCCAGGTAAAGTTAATGCACACCTTGTCGGCAATTAACACTGCT 660
Db 601 AATACTCCTTTCAATCCAGGTAAAGTTAATGCACACCTTGTCGGCAATTAACACTGCT 660
Qy 661 AATGTTGCTTAAGCTACTTTAGGTAATGATGCTAATAATACCGCATATATGACGTTGCA 720
Db 661 AATGTTGCTTAAGCTACTTTAGGTAATGATGCTAATAATACCGCATATATGACGTTGCA 720
Qy 721 TCCCTCGATGCTACTATAAGTCTGCTGGAGTAATTAATGGGTAGCACAAAACACTGAA 780
Db 721 TCCCTCGATGCTACTATAAGTCTGCTGGAGTAATTAATGGGTAGCACAAAACACTGAA 780
Qy 781 TGTACTAATTTGCTCTCACTTACAAATTAATGCTCTCTAATTTCAATCCAGGTAAT 840
Db 781 TGTACTAATTTGCTCTCACTTACAAATTAATGCTCTCTAATTTCAATCCAGGTAAT 840
Qy 841 AGTACATGCTACCTTGCCAGCAATAAAGATTATGCTGCTGAAGCCACTGACAGTGGT 900
Db 841 AGTACATGCTACCTTGCCAGCAATAAAGATTATGCTGCTGAAGCCACTGACAGTGGT 900
Qy 901 GCCGCTACTTTAGCCAAATAATGTAATTCATGATGCCCTGATGCTGCTGCTAGT 960
Db 901 GCCGCTACTTTAGCCAAATAATGTAATTCATGATGCCCTGATGCTGCTGCTAGT 960
Qy 961 GGAGCAACTAATTAATGTAATTAATAACAGAAATGCTGCTGCTGCTGCTGCTGCTGCT 1020
Db 961 GGAGCAACTAATTAATGTAATTAATAACAGAAATGCTGCTGCTGCTGCTGCTGCTGCT 1020
Qy 1021 TTTGATGGTAATAATTTCTAGGCAAGAGTAGTAGTGAAGCAATGCTCCAGCAATAA 1080
Db 1021 TTTGATGGTAATAATTTCTAGGCAAGAGTAGTAGTGAAGCAATGCTCCAGCAATAA 1080
Qy 1081 GTTTAAGGCGCTGACCAACTGCGAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1140
Db 1081 GTTTAAGGCGCTGACCAACTGCGAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1140
Qy 1141 GAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1200
Db 1141 GAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1200
Qy 1201 TCTGAATGCTGTTAAATGCTGCCAATTTTATACATAAAATAAACTGATTTGGGTAGCA 1260
Db 1201 TCTGAATGCTGTTAAATGCTGCCAATTTTATACATAAAATAAACTGATTTGGGTAGCA 1260
Qy 1261 GGTAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1320
Db 1261 GGTAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1320
Qy 1321 CCTGAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1380
Db 1321 CCTGAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 1380
Qy 1381 TTATGATTTCTTATTTATTTATGATGA 1410
Db 1381 TTATGATTTCTTATTTATTTATGATGA 1410

RESULT 2
AAA97038 standard; DNA; 1404 BP.
XX
AC AAA97038;
XX
DT 18-DEC-2000 (first entry)
XX
DE 55kD i-antigen nucleotide sequence.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;

Thu Feb 20 11:10:24 2003

CC paromycin) for that of BTU1, can be used to generate BTU1 gene knockouts
CC and for positive selection. Heterologous nucleic acids (especially
CC encoding antigenic polypeptides) can be inserted into a BTU gene for
CC successful cell-surface expression that is maintained by way of negative
CC selection. Preferred expression vectors disrupt the Btu1-1K350M gene by
CC homologous recombination-mediated insertion of a heterologous nucleic
CC acid, thereby restoring resistance to pacitaxel in the resulting
CC transgenic host. Transgenic ciliated protozoa are useful as live vaccines
CC for stimulating an immune response in a vertebrate. The transgenic
CC protozoan host cells are also useful for producing polyclonal antibodies
CC (claimed). In particular, Tetrahymena expressing Ichthyophthirius
CC multifiliis immobilization-antigen (i-antigen) protein on their surface
CC are effective vehicles for vaccination of freshwater fish against
CC infection by I. multifiliis.

XX Sequence 1404 BP; 447 A; 241 C; 256 G; 460 T; 0 other;

Query Match 99.5%; Score 1402.4; DB 21; Length 1404;
Best Local Similarity 99.9%; Pred. No. 6.5e-299;
Matches 1403; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 ATCAAAATAATATTTAGTAAATATTTGATTATTTTTCATTATTTATCAATTAATAATCT 60
DB 1 ATCAAAATAATATTTAGTAAATATTTGATTATTTTTCATTATTTATCAATTAATAATCT 60
QY 61 GCTAATTGCTGTTGGAACTGAACCTAACACAGCGGATAGTTGATGATCTAGGAAT 120
DB 61 GCTAATTGCTGTTGGAACTGAACCTAACACAGCGGATAGTTGATGATCTAGGAAT 120
QY 121 CCTGCAAAATTTGTTTAAATTTAGAAAACTTTTATTAATAATGCTGCTTTCGTT 180
DB 121 CCTGCAAAATTTGTTTAAATTTAGAAAACTTTTATTAATAATGCTGCTTTCGTT 180
QY 181 CCTGGTCTAGTAGTACACCTTGTCCATAAAAAAGATGCTGGTCTTAAACCAAT 240
DB 181 CCTGGTCTAGTAGTACACCTTGTCCATAAAAAAGATGCTGGTCTTAAACCAAT 240
QY 241 CCACCTGCTACTGCTAATTTAGTACATATGTAAGCTTAAATGCCCTGCTGGTACCGCA 300
DB 241 CCACCTGCTACTGCTAATTTAGTACATATGTAAGCTTAAATGCCCTGCTGGTACCGCA 300
QY 301 ATTGCAGGTGGAGCAACAGATTTATGCAGCAATTAATCACAGAATGTTTAAATTTAGAAAT 360
DB 301 ATTGCAGGTGGAGCAACAGATTTATGCAGCAATTAATCACAGAATGTTTAAATTTAGAAAT 360
QY 361 AATTTTATAATGAAATGCTCCAAATTTTAAATGCAGGTGCTAGTACATGCACAGCTTGT 420
DB 361 AATTTTATAATGAAATGCTCCAAATTTTAAATGCAGGTGCTAGTACATGCACAGCTTGT 420
QY 421 CCGGTAAACAGAGTTGGTGGTGCATTTGACCTGCTGGTAAATGCCCTACCATAGTCGATAA 480
DB 421 CCGGTAAACAGAGTTGGTGGTGCATTTGACCTGCTGGTAAATGCCCTACCATAGTCGATAA 480
QY 481 TGTAACGTGCGATGTCCTACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 540
DB 481 TGTAACGTGCGATGTCCTACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 540
QY 541 AGATCATTTACAGAGATGTTAAATGATGACTTAACTTTTACTATAATGTTAAATGTT 600
DB 541 AGATCATTTACAGAGATGTTAAATGATGACTTAACTTTTACTATAATGTTAAATGTT 600
QY 601 AATACCTCTTTTCAATCCAGGTAAAGTTAATGACACCTTGTCCCGCAATTAACCTGCT 660
DB 601 AATACCTCTTTTCAATCCAGGTAAAGTTAATGACACCTTGTCCCGCAATTAACCTGCT 660
QY 661 AATGTTGCTTAAAGTACTTAAATGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 720
DB 661 AATGTTGCTTAAAGTACTTAAATGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 720
QY 721 TGCCTCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 780
DB 721 TGCCTCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT 780

QY 1321 CCTGAATCTGCTAAAAAATATATAATGTTGATTGCTTAATTTTATCAATTTCTCTTA 1380
DB 1321 CCTGAATCTGCTAAAAAATATATAATGTTGATTGCTTAATTTTATCAATTTCTCTTA 1380
QY 1381 TTATTGATTTCTTATTTATTTA 1404
DB 1381 TTATTGATTTCTTATTTATTTA 1404

RESULT 3

AAA52136
ID AAA52136 standard; DNA; 1404 BP.

AC AAA52136;

XX 04-DEC-2000 (first entry)

XX 55 kDa i-antigen gene.

XX BTU1; beta-tubulin; protein expression system; negative selection;
XX pacitaxel sensitivity; cell surface; antigen; protozoa; ciliate;
XX live vaccine; Ichthyophthirius multifiliis; immobilization-antigen;
XX i-antigen; freshwater; fish; protozoacide; ds.

XX Ichthyophthirius multifiliis.

XX Key Location/Qualifiers
XX CDS 1..1404

XX /*tag= a
XX /codon= (seq: "TAA", aa:Gln)
XX /product= 55_kDa_i-antigen
XX /partial

XX WO200046381-A1.

XX 10-AUG-2000.

XX 04-FEB-2000; 2000WO-US02966.

XX 04-FEB-1999; 99US-0118634.

XX 02-MAR-1999; 99US-0122372.

XX 17-MAR-1999; 99US-0124905.

XX 27-APR-1999; 99US-0131121.

XX (UYGE-) UNIV GEORGIA RES FOUND INC.

XX (GAER/) GAERTIG J.

XX (DICK/) DICKERSON H W.

XX (CLAR/) CLARK T G.

XX Gaertig J, Dickerson HW, Clark TG;

XX WPI; 2000-514962/46.

XX P-PSDB; AAY97177.

XX Recombinant expression systems for expressing heterologous nucleic
XX acids and producing recombinant protein, comprises nonpathogenic
XX protozoa such as Tetrahymena resistant to pacitaxel

XX Disclosure: Fig 3B; 83pp; English.

XX Tetrahymena thermophila expresses two major beta-tubulin genes (BTU1 and
XX BTU2), which encode identical beta-tubulin proteins. Either of these two
XX genes (but not both at once) can be disrupted without a detectable change
XX in the cell phenotype. A K350L substitution in the BTU1 beta-tubulin
XX protein confers increased resistance to microtubule-depolymerizing drugs
XX and increased sensitivity to pacitaxel, a microtubule-stabilizing drug.
XX Cells carrying the BTU1-K350M allele can be transformed to pacitaxel
XX resistance by gene replacement of BTU1-K350M with a wild-type BTU1 gene
XX fragment, eliminating the need to incorporate a means for positive
XX selection. Where the host organism is not a T. thermophila mutant
XX containing the BTU1-K350M allele, BTU1::neol construct, which
XX substitutes the coding region of the neol gene (conferring resistance to

QY 121 CCTCCAAATGCTGTAATTTAGAAAACTTTTATTATATAATGCTGCTGCTTTTCGTT 180
DB 121 CCTGCTACTGTGGAAGTGTGAGAACTTCTACTACCAACACGCTGCTGCTTCGTCG 180
QY 181 CCTGGTGTAGTGTACACCTTTGCCATAAAAAAGATGCTGGTGTCTTAACCAAT 240
DB 181 CCTGGAGCTTCTACTCTAGCCCTTGTCCTCAGAGAAGGACGCTGAGCTCAGCCTAAC 240
QY 241 CCACCTGCTACTGCTAATTTAGTACATATGTAAGTGTAAATGCCCTGCTGGTACCGCA 300
DB 241 CCTCCTGCTACCGCTAACCTGGTGACCCAGTGTAAAGTGTCCCTGCTGGAAACCGCT 300
QY 301 ATTGCAGGTGGAGCAACAGATATTGACGACCAATATCACAGAATGCTTAATGTAGAAAT 360
DB 301 ATCGCTGGAGGAGCTACCGACTACGCTGTCTATCATCACCGAGTGTGAACTGTGCAATC 360
QY 361 AATTTTATATGAATGCTCCAAATTTTATGCAAGGTGTAGTACATGCAACAGCTGTG 420
DB 361 AACTTCTACACGAGAACGCTCCTAACTTCAAGCCTGGAGCTTCTACCTGTACCGCTGTG 420
QY 421 CCGGTAACAGAGTTGGTGTGCATTGACTGCTGGTGAATGCCGCTACCATAGTCCGATAA 480
DB 421 CCTGTGAACCGCTGGGAGGAGCTGTACCGCTGGAAACGCTGTACCATCGTGGCTCAG 480
QY 481 TGTAACTCGCATGCTCTACTGTACTGCACTTTGATGTGATGAGTAACTACTGATTATGTT 540
DB 481 TGTAACTGGCTTTGCTCTACCGGAACCGCTCTGGAGCGGAGTGACCAACGACTACGTG 540
QY 541 AGATCAATTCACAGAAATGTGTTAAATGTAGACTTAATCTTTACTATATGTTAAATGGT 600
DB 541 CGTCTTTACCCAGTGTGTGAAGTGTCCCGTGAACCTTCTACTACACGGAACACGGA 600
QY 601 AATACTCCTTTCAATCCAGTTAAAGTTAATGCACACCTTTGCCGCAATTAACCTGCT 660
DB 601 AACACCCCTTTCAACCCCTGAAAGTCTCAGTGTACCCCTTGTCCTGTCTCAAGCCTGCT 660
QY 661 AATGTTGCTTAAGCTACTTTAGTGAATGATGTCTACAAATTAACCGCATATGTAACGTTGCA 720
DB 661 AAGCTGGCTCAGCTACCTCGGGAACGAGCTACCATCACCGCTCAGTGTAAAGTGGCT 720
QY 721 TGCCCTGATGGTACTATAAGTGTCTGGAGTAAATAATTTGGTAGCACAAACACTCAA 780
DB 721 TGTCTTGACGGAACCATCTCTGCTGTGGAGTGAACACTGGTGGCTTCAGAACACCGAG 780
QY 781 TGTACTAATTTGCTCCTAACTTTTACAAATAATATGCTCTCTAATTTTCAATCCAGGTAAT 840
DB 781 TGTACCAACTGTGCTCCTAACTTCTACAAACACACGCTCTCTAATTTCAACCCCTGGAAC 840
QY 841 AGTACATGCTACCTTGCCAGCAATAAAGATTATGCTGTGAAGCCACTGCAAGGTGT 900
DB 841 TCTACCTGTGCTGCTGTCTAACAGGACTACGGAGCTGAGGCTACCGCTGGAGGA 900
QY 901 GCGGTACTTTAGCAAAATATGTAATATTGCATGCCCTGATGGTACTGCAATTTGCTAGT 960
DB 901 GCTGTACCCCTGGCTAAGCAGTGAACATGCTTGTCTGTGACGGAACCGCTATCGCTTCT 960
QY 961 GGAGCAACTAATATGTAATATTAACAGAAATGCTTAATTTGCTGTGCTTAACCTTTAT 1020
DB 961 GGAGCTACCAACTACGTGATCTCGAGACCCGAGTGTCTGAACTGTGCTGCTTAACCTTAC 1020
QY 1021 TTTGATGCTAATAATTTCTAGGACGAGTAGTAGTACAAAGCATCTCCAGCAATAATAA 1080
DB 1021 TTTGACGGAACAACTTCCAGCTGGATCTCTCGCTGTAGGGTTGCTGTCTGCTAACAAG 1080
QY 1081 GTTTAAGCGGCTGTAGCAACTGAGGTGGTACTGCTACTTTAATTTGCAATATGTGCCCTT 1140
DB 1081 GTGAGGAGGCTGTGGCTACCGCTGGAGAACCCGCTACCCCTGATCGCTCAGTGTGCTCTG 1140
QY 1141 GAATGCCCTGCTGGTACTGACTACCCAGTGAACACATCTACTTATAATAAAGCAGCA 1200
DB 1141 GAGTGTCTGTGGAACCGCTGTGACCGAGGGAACCACTCTACCTACAAGCAGGCTGCT 1200
QY 1201 TCTGAATGCTTAAATGTGCTGCCAACTTTTATACTACAAAATAAATGATTGGTAGCA 1260

DB 1201 TCTGAGTGTGTGAAGTGTGCTGCTAACTTCTACACCACCAAGACGACCTGGTGGCT 1260
QY 1261 GGTATTGATACATGCTACTAGTGTGTAATAAAAAATTAACCTTCTGGCGCTGAAGCTAAATTA 1320
DB 1261 GGAATCGACACCTGTACTCTTGTGAACAAGAAGCTGACCTCTGGAGCTGAGGCTAACCTG 1320
QY 1321 CCTGAATCTGCTAAAAAATATATATGTAATTCGCTAAATTTTATCAATTTTCCTTTA 1380
DB 1321 CCTGAGTCTGCTAAGAAGAACATCCAGCTGTGACTTCGTAACCTTCTGTCTATCTCTG 1380
QY 1381 TTATTGATTTCTTATTA 1397
DB 1381 CTGCTGATCTCTTACTA 1397

RESULT 6

AAA97065

ID AAA97065 standard; DNA; 1404 BP.

XX AAA97065;

AC AAA97065;

XX 18-DEC-2000 (First entry)

DT 18-DEC-2000 (First entry)

XX Synthetic 55kd i-antigen gene sequence.

DE Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;

XX white spot disease; freshwater fish; immune response; infection control.

KW Ichthyophthirius multifiliis.

XX Synthetic.

OS WO200046373-A1.

XX 10-AUG-2000.

PN 04-FEB-2000; 2000WO-US02962.

XX 04-FEB-1999; 99US-0118634.

XX 02-MAR-1999; 99US-0122372.

PR 17-MAR-1999; 99US-0124905.

PR 27-APR-1999; 99US-0131121.

XX (UYGE-) UNIV GEORGIA RES FOUND INC.

PA (CORR) CORNELL RES FOUND INC.

PA (CLARK/) CLARK T G.

PA (DICK/) DICKERSON H W.

PA (LINT/) LIN T.

XX Clark TG, Dickerson HW, Lin T;

PI WPI; 2000-506071/45.

DR Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius

XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius

PT infection in fish -

PS Example 5; Figure 13; 144pp; English.

XX This invention relates to novel i-antigen polypeptide sequences.

CC I-antigens or immobilisation antigens are common to a variety of

CC hymenostomatid ciliates and their expression varies in response to

CC environmental stimuli. This invention relates to i-antigens in

CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite

CC of freshwater fish causing ichthyophthiriasis or white spot disease. The

CC invention includes two polypeptide and polynucleotide sequences for two

CC i-antigens, of 48 and 55 kD. Also included in the invention are

CC antibodies capable of binding to the nucleotide sequences and a method

CC for identifying I. multifiliis serotypes using the nucleotide sequences.

CC A composition (containing the i-antigen nucleotide) capable of eliciting

CC an immune response in fish is useful for prophylaxis, treatment or for

CC controlling I. multifiliis infection in fish. Polynucleotide or protein

CC vaccines comprising a portion of the amplified product encoding an

CC antigenic i-antigen polypeptide obtained is also useful for treating or
CC preventing I. multifiliis infection in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ

Sequence 1404 BP; 317 A; 418 C; 339 G; 330 T; 0 other;

Query Match 55.4%; Score 781; DB 21; Length 1404;
Best Local Similarity 72.4%; Pred. No. 2.9e-162;
Matches 1012; Conservative 0; Mismatches 385; Indels 0; Gaps 0;

QY	1	ATGAAATAATATTTTGTAGTAATATTGTAATTTTCAATTAATTAATCT	60
DB	1	ATGAAGAACAACATCCGGTGATCTCTCTGTTTCATCAACGAGATCAAGTCT	60
QY	61	GCTAATTTGCTGTGGAACTGAACATAACACAGCCGATAGTTGATGATCTAGGAAT	120
DB	61	GCTAATTTGCTGTGGAACTGAACATAACACAGCCGATAGTTGATGATCTAGGAAT	120
QY	121	CCTGCAATTTGCTGTAGTATTTAGAAAACCTTTTATATATTAATGCTGCTGCTGTT	180
DB	121	CCTGCTAATGCTGTGAATGCTCAGAGAATCTTCTACTACAACAACGCTGCTGCTG	180
QY	181	CCTGGTCTAGTACCTGTGCACTTGTCCATAAATAAAGATGCTGCTTAACCAAT	240
DB	181	CCTGGAGCTTCTACTGTACCTGCTGCTGCAAGAAAGGAGCTGAGCTGAGCTTAAC	240
QY	241	CCACTGCTACTGCTATTTAGTACATAATGTAACCTTAAATGCCCTGCTGCTACCGCA	300
DB	241	CCTGCTGCTACTGCTATTTAGTACATAATGTAACCTTAAATGCCCTGCTGCTACCGCA	300
QY	301	ATTCAGGTGGAGCAACAGATTTATGAGCAATATACAAATGTTTATTTGTAAGATT	360
DB	301	ATGCTGGAGGAGCTACCGACTACGCTGCTATCATCACCAGTGTGTGAATCTGCGATC	360
QY	361	AATTTTATATGAATGCTCCAAATTTTAAATGACGCTGCTAGTACATGACAGCTGTT	420
DB	361	AATTTTATATGAATGCTCCAAATTTTAAATGACGCTGCTAGTACATGACAGCTGTT	420
QY	421	CCGTTAAACAGAGTTGGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	480
DB	421	CCTGTGAACCTGTGGGAGGAGCTCTGACCGCTGGAACGCTGCTGCTGCTGCTGCTGCT	480
QY	481	TGTACAGTGGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	540
DB	481	TGTACAGTGGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	540
QY	541	AGATCATTACAGAGATGTTTAAATGTAGACTTAACTTTTACTATAATGTAATGTTGTT	600
DB	541	CGCTTTTACCGAGTGTGAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	600
QY	601	AATACCTTTTCAATCCAGGTAAAGTTAATGCAACCTTGTCCGCAATTAACCTGCT	660
DB	601	AACACCTTTTCAATCCAGGTAAAGTTAATGCAACCTTGTCCGCAATTAACCTGCT	660
QY	661	AATGTTGCTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTT	720
DB	661	AACGTTGCTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTT	720
QY	721	TGCGCTGATGCTATTAAGTGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	780
DB	721	TGCTCTGAGGAAACCATCTCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	780
QY	781	TGTACTAATTTGCTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTT	840
DB	781	TGTACCAACTGTGCTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTTAACTT	840
QY	841	AGTACATGCTACCTTGTCCGCAATTAAGATTTATGTTGCTGTAAGCCACTGCAAGTGTG	900
DB	841	TCTACCTGTGCTTGTCTCTGCTTAAACAGGACTACGAGGCTGAGGCTACCGCTGGAGGA	900

QY	901	CCCGTACTTTAGCAAAATATGTAATTTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	960
DB	901	CCTGCTACCTTGGCTAGCAGTGTAAATCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	960
QY	961	GGAGCAACTAATTTATGTAATTTAATTAACAGAAATGCTTAATTTGCTGCTGCTGCTGCTGCT	1020
DB	961	GGAGTACCAACTAGTGTATCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1020
QY	1021	TTTGTATGTAATTAATTTCTAGGAGGAGTATGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1080
DB	1021	TTTGTATGTAATTAATTTCTAGGAGGAGTATGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1080
QY	1081	GTTTAAAGCGCTGTAGCAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1140
DB	1081	GTTTAAAGCGCTGTAGCAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1140
QY	1141	GAATGCCCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1200
DB	1141	GAATGCCCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1200
QY	1201	TCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1260
DB	1201	TCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1260
QY	1261	GCTATTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1320
DB	1261	GCTATTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1320
QY	1321	CCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1380
DB	1321	CCTGATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT	1380
QY	1381	TTATTGATTTCTTATTA 1397	
DB	1381	CTGCTGATCTCTTACTA 1397	

RESULT 7
AAA97037
ID AAA97037 standard; DNA; 2486 BP.
XX
AC AAA97037;
XX
DT 18-DEC-2000 (first entry)
XX
DE Nucleotide sequence encoding 48kD i-antigen.
XX
KW Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
OS Ichthyophthirius multifiliis.
XX
PN W0200046373-A1.
XX
PD 10-AUG-2000.
XX
PF 04-FEB-2000; 2000WO-US02962.
XX
PR 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-012372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
PA (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (GLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LIN T.
XX
PI Clark TG, Dickerson HW, Lin T;
XX
DR WPI; 2000-506071/45.

Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius multifiliis, useful for prophylaxis and treatment of Ichthyophthirius infection in fish

Disclosure; Figure 1; 144pp; English.

This invention relates to novel i-antigen polypeptide sequences. I-antigens or immobilisation antigens are common to a variety of hymenostomatid ciliates and their expression varies in response to environmental stimuli. This invention relates to i-antigens in Ichthyophthirius multifiliis, a protozoan which is an obligate parasite of freshwater fish causing ichthyophthiriasis or white spot disease. The invention includes two polypeptide and polynucleotide sequences for two i-antigens, of 48 and 55 kD. Also included in the invention are antibodies capable of binding to the nucleotide sequences and a method for identifying I. multifiliis serotypes using the nucleotide sequences. A composition (containing the i-antigen nucleotide) capable of eliciting an immune response in fish is useful for prophylaxis, treatment or for controlling I. multifiliis infection in fish. Polynucleotide or protein vaccines comprising a portion of the amplified product encoding an antigenic i-antigen polypeptide obtained is also useful for treating or preventing I. multifiliis infection in fish. Sequences AAA97036-A97042, and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene fragments identified in the invention. Sequences AAA97043-A97064 (excluding AAA97060) and AAA97071-A97088 represent primers used in the isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and AAB25893-B25906 represent i-antigen protein and peptide sequences.

Query Match 18.3%; Score 258; DB 21; Length 2486;
Best Local Similarity 56.8%; Pred. No. 3.5e-47;
Matches 666; Conservative 0; Mismatches 395; Indels 111; Caps 6;

Db 1139 GCCTTTAAAGTTTTTGTCTGCTGCTGCGCTGCAGGTGTTGCTGCCGTACTAGTTAAT 1198
QY 848 GCCTACTCTGCCAGCAAAATAAGATTATGCTGCTGAAGCACTGCAGGTGGTCCGCTA 907
Db 1199 GTGTACTCTGCCAATAAACAAGAGATTCTCCCT---GCCACTGCAGGTGCTTAAGCTA 1255
QY 908 CTTTACGCAAAATAATGATAATTTGGCATGCCCTGATGCTGAATGCTAGTGAGCAAA 967
Db 1256 ATTTTACGCAATAATGCAGTACTTAATGTCCAACCTGGCACTGCAATTCGAAGACGAGTGA 1315
QY 968 CTAATTTATGTAATTTATAAACAAGATGCTCTAAATGCTGCTGCTAACTTTTATTTTGGATG 1027
Db 1316 CACTTGTCTTATGTAATTCATCCACATAATGCTCTTAATGCAATGCTTAATTTACTTTTAA 1375
QY 1028 GTAATAATTTCTAGGAGCAAGTAGTAGATGCAAAAGCAATGCTCCAGCAAAATAAGTTTAAAG 1087
Db 1376 ATGGTAATTTTGAAGCAGGTAAAGTTAATGTTTAAAGTGCAGTAAGTAAACT---A 1432
QY 1088 GCGCTGTACAACCTGCAGGTGCTACTGCTACTTTTAAATGTCATATGTCGCCCTTGAATGCC 1147
Db 1433 CTCACGACATCTCCAGGTAATGCTACTTAAAGCCACATAATGTTTGACACATGTC 1492
QY 1148 CTGCTGCTACTGCTACTCACCAGATGGAACAACATCTACTTATAAATAAGCAGCATCTGAAT 1207
Db 1493 CTGCTGCTACACTTGTGATGATGAACATCAACTTAATTTGTAGCTTCCGCAACTGAAT 1552
QY 1208 GTGTTAAATGCTGCTCCCAACTTTTATCTACAAAATAAACAATGATGGGTAGCAGGTATG 1267
Db 1553 GTACTAAATGTTCTGCTGCTTTTTCATCAAAAACAACCTGGTTTACAGCAGGTACTG 1612
QY 1268 ATACATGCTACTAGTTCTAATAAATAAATAAATTAACCTTCTGGCGCTGAAGCTAATTTACTCTGAAT 1327
Db 1613 ATACATGCTACTGAATGCTACTAATAAATAAATAAATTAACCTTCTGGTGCACAGCTAAAGTATATGCTG 1672
QY 1328 CTGCTAAAAAATAATATAATG-----TGATTTTCGCTAAATTTTATCAATTTCCCT 1378
Db 1673 AAGCTACTCAAAAGTAATATGCGCCCTCCACTACTTTTCGCTAAATTTTATCGAATTTCCCT 1732
QY 1379 TATTATGCTTCTTATTTATTTATTTATTTATGATGA 1410
Db 1733 TATTATTTATTTCTTTCTTTATTTATTTATGATGA 1764

RESULT 8
AAA52134
ID AAA52134 standard; DNA; 2811 BP.
XX
AC AAA52134;
XX
DT 04-DEC-2000 (first entry)
XX
DE pB1CH3 construct containing 48 kDa i-antigen gene.
XX
KW BTU1; beta-tubulin; protein expression system; negative selection;
KW paclicaxel sensitivity; cell surface; antigen; protozoa; ciliate;
KW live vaccine; Ichthyophthirius multifiliis; immobilization-antigen;
KW i-antigen; freshwater; fish; protozoacide; pB1CH3; ds.
XX
OS Chimeric - Tetrahymena thermophila.
OS Chimeric - Ichthyophthirius multifiliis.
XX
FH Key Location/Qualifiers
CDS 988..2325
ET /*tag= a
ET /product= 48_kDa_i-antigen
ET /transl_except= (pos:1078..1080, aa:Gln)
FT /codon= (seq:"TAA", aa:Gln)
FT misc_feature 991..999
ET /*tag= b
ET /note= "Cloning residual from parent construct HHF1::neo"
XX
PN W0200046381-A1.
XX

XX 48kD i-antigen nucleotide sequence.
DE
DE
KW Immobilisation antigen: i-antigen; ichthyophthiriasis; vaccine; ds;
KW white spot disease; freshwater fish; immune response; infection control.
XX
OS Ichthyophthirius multifiliis.
XX
PN WO200046373-A1.
XX
XX 10-AUG-2000.
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
XX
PR 02-MAR-1999; 99US-0122372.
XX
PR 17-MAR-1999; 99US-0124905.
XX
PR 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
XX (CORR) CORNELL RES FOUND INC.
XX PA (CLARK/) CLARK T G.
XX PA (DICK/) DICKERSON H W.
XX PA (LINT/) LIN T.
XX
XX Clark TG, Dickerson HW, Lin T;
XX WPI; 2000-506071/45.
XX
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
XX infection in fish .
XX
XX Claim 2; Figure 3; 144pp; English.
XX
XX This invention relates to novel i-antigen polypeptide sequences.
XX i-antigens or immobilisation antigens ar common to a variety of
XX hymenostomatid ciliates and their expression varies in response to
XX environmental stimuli. This invention relates to i-antigens in
XX ichthyophthirius multifiliis, a protozoan which is an obligate parasite
XX of freshwater fish causing ichthyophthiriasis or white spot disease. The
XX invention includes two polypeptide and polynucleotide sequences for two
XX i-antigens, of 48 and 55 kD. Also included in the invention are
XX antibodies capable of binding to the nucleotide sequences and a method
XX for identifying i. multifiliis serotypes using the nucleotide sequences.
XX A composition (containing the i-antigen nucleotide) capable of eliciting
XX an immune response in fish is useful for prophylaxis, treatment or for
XX vaccines comprising a portion of the amplified product encoding an
XX antigenic i-antigen polypeptide obtained in fish. polynucleotide or protein
XX preventing i. multifiliis infection in fish. Sequences AAA97036-A97042,
XX and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
XX fragments identified in the invention. Sequences AAA97043-A97064
XX (excluding AAA97060) and AAA97071-A97088 represent primers used in the
XX isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
XX AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
XX Sequence 1326 BP; 371 A; 251 C; 253 G; 451 T; 0 other;
XX
Query Match 17.9%; Score 252.6; DB 21; Length 1326;
Best Local Similarity 56.7%; Pred. No. 4.5e-46;
Matches 660; Conservative 0; Mismatches 394; Indels 111; Gaps 6;
XX
XX 344 GTGTTAATGTAGAAATTAATTTTATATGAATAATGCTCCAAATTTTATGCGAGTGCTA 403
DB IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII
XX 167 GTGCTGCTTAAGGAGAGAGCTAATGGTAATTAACCTTTTCGCAGCAAAATTAATGCTGCTAGAG 226
XX
XX 404 GTACATGCACAGCTTGTCGCGTAACACAGAGTGGTGGTGCAATTTGACTGGTGGTAATGCCG 463
DB IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII
XX 227 GTATATGTGTACCATGCCAATAAACAAGAGTAGGCTGTGTTACCAATGCAGGTGACTTAG 286
XX
XX 454 CTACCATAGTCGCATATGTAACGTCGCATGTCTACTGGTACTGCATTTGATGATGGAG 523
DB IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII

Db 287 CTACTTTAGCCACATAAATGCAGTACTTTAATGTCCTACTGGCAGCTGCACCTTGATGGAG 346
Qy 524 TAACTACTGATTAATGTTAGATCATTACAGAAATGTGTTAAATAGACATTAACCTTTTACT 583
Db 347 TGACAGATGTTTTGATAGATCAGCCGCAATAATGTGTTAAATGCAACCTTAACCTTTTACT 406
Qy 584 ATAATGGTAATAATGGTAAATACTCCCTTTCAATCCAGGTAAAGCTTAATGCACACCTTGC 643
Db 407 ATAATGGTGTCTCCTTAAGGTGAAGCTCCTGGCGCTTTAAGCTTTTGTGCTGGTGGT 466
Qy 644 CGGCAATTAACCTGCT-----AAATG 664
Db 467 CCGCTGCAGGTGTGCTGCGCTTACTAGTTAATGTACTTGGCCAACTAAACAAAAAGC 526
Qy 665 TTGCTTAAGCTACTTTTAGTAAATGCTACATAATACCCGCAATAATGTAACGTGGATGCC 724
Db 527 ATTCTCTGCCACTGCAGGTGCGCTAAGCTAATTTAGCCACATAATGTAGCAATTAATGTC 586
Qy 725 CTGATGCTACTATAAGTGTGCTGGAGT---AAATAATTTGGGTAGCACAAAAACACTGAAT 781
Db 587 CTACTGGCACTGTACTTGATGATGGAGTGACACTTGTTTTAAATACATCAGCCACATTA 646
Qy 782 GTACTAATTTGCTCCTTAACCTTTTACAATAATAATGCTCCTAAT-----826
Db 647 GTGTTAAATGCAGACCTTAACCTTTTACTAATAATGGTGGTTCCTCTTAAGGTGAAGCTCCTG 706
Qy 827 -----TCAATCCAGGTAATAGTACAT 847
Db 707 GCGTTTAAGTTTTGCTGCTGGTGGCGCTGCAGGTGTGCTGCCGCTTACTAGTTAAT 766
Qy 848 GCGTACTTGGCCAGCAAAATAAGATTATGTGCTGAAGCCACTGCAGGTGGTGGCGCTA 907
Db 767 GTGTACTTTGCCAAATAAACAAGATTCCT---GCCACTGCAGGTGCCTAAGCTA 823
Qy 908 CTTTAGCCAAATAATGTAATATGTCATGCCCTGATGCTGCTGCTAATGCTAGTGCAGGACAA 967
Db 824 ATTTAGCCACATAATGTCAGTACTTAATGTCCAACCTGGCAATTCGAAGCAGGAGTGA 883
Qy 968 CTAATTAATGTAATTAATAACAGAAATGCTAAATTTGCTGCTAACTTTTATTTTGTATG 1027
Db 884 CACTTGTTTTAGTAATTCATCCACATAATGTTCTTAATGCAATTCCTAATTTACTTTTTA 943
Qy 1028 GTAATAATTTCTAGCAGGAAGTACTAGATGCAAAAGCATGCCAGCAATAAAGTTTAAAG 1087
Db 944 ATGGTAATTTTGAAGCAGGTAAGTAAATGTTTAAAGTGTCCAGTAAGTAAACT---A 1000
Qy 1088 GCGCTGTAGCAACTGCAGGTGGTACTGCTACTTTAATTTGCAATAATGTCCTTGAATGCC 1147
Db 1001 CTCAGCAGCATGCTCCAGSTAATGCTGCTACTTAAGCCACATAATGTTGACCACTATGTC 1060
Qy 1148 CTGCTGGTACTGTACTACCGATGGAACAACATCTACTTATAATAAGCAGCATCTGAAT 1207
Db 1061 CTGCTGGTACAGTACTGTATGATGGAACATCAACTAATTTTGTAGCTTCGCAACTGAAT 1120
Qy 1208 CTGTTTAAATGTGCTGCCAACTTTTATCTACAAAAATAAAGTGAATGGGTAGCAGGTATG 1267
Db 1121 GTACTAATGTTCTGCTGGCTTTTTCGATCAAAAACAACTGGTTTTACAGAGGACTG 1180
Qy 1268 ATACATGCTAGTGTGTAATAAAAAATAAATTTCTTGGCGCTGAAGCTAATTTTACCTGAAT 1327
Db 1181 ATACATGCTAGTGAATGACTAAAAATAAATTTAACTTCTGGTGGCCACAGCTAAGATATATGCTG 1240
Qy 1328 CTGCTAAAAAAATATATATG-----TGATTTTCGCTAATTTTATCAATTTTCT 1378
Db 1241 AAGCTACTCAAAAAGTATAATGCGCCTCCACTACTTTTCGCTAAATTTTATCGATTTCTCT 1300
Qy 1379 TATTATTGATTTCTTATTATTATT 1403
Db 1301 TATTATTATTCTTCTATTATT 1325

RESULT 10
AAAS2135

II AAA52135 standard; DNA; 1326 BP.
XX AAA52135;
AC
XX 04-DEC-2000 (first entry)
DT
DE 48 kDa i-antigen gene.
XX
XX BTUL; beta-tubulin; protein expression system; negative selection;
KW pacitaxel sensitivity; cell surface; antigen; protozoa; ciliate;
KW live vaccine; Ichthyophthius multifiliis; immobilization-antigen;
KW 1-antigen; freshwater; fish; protozoa; ds.
XX
XX Ichthyophthius multifiliis.
OS
XX
XX Location/Qualifiers
FH 1-1326
FT /tag= a
FT /transl_except= "pos:82..84, aa:Gln"
FT /codon= (seq:"TAA", aa:Gln)
FT /product= 48_kDa_i-antigen
FT /partial
XX
XX WO200046381-A1.
XX
XX 10-AUG-2000..
XX
XX 04-FEB-2000; 2000WO-US02966.
XX
XX 04-FEB-1999; 99US-0118634.
XX 02-MAR-1999; 99US-0122372.
XX 17-MAR-1999; 99US-0124505.
XX 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
XX (GAER/) GAERTIG J.
XX (DICK/) DICKERSON H W.
XX (CLAR/) CLARK T G.
XX
XX Gaertig J, Dickerson HW, Clark TG;
PI
XX WPI: 2000-514962/46.
XX P-PSDB: AAY97176.
XX
XX Recombinant expression systems for expressing heterologous nucleic
XX acids and producing recombinant protein, comprises nonpathogenic
XX protozoa such as Tetrahymena resistant to paclitaxel
XX
XX Disclosure; Fig 3B; 83pp; English.
XX
XX Tetrahymena thermophila expresses two major beta-tubulin genes (BTUL and
XX BTU2), which encode identical beta-tubulin proteins. Either of these two
XX genes (but not both at once) can be disrupted without a detectable change
XX in the cell phenotype. A K350L substitution in the BTUL beta-tubulin
XX protein confers increased resistance to microtubule-depolymerizing drugs
XX and increased sensitivity to paclitaxel, a microtubule-stabilizing drug.
XX Cells carrying the Btul-1K350M allele can be transformed to paclitaxel
XX resistance by gene replacement of Btul-1K350M with a wild-type BTUL gene
XX fragment, eliminating the need to incorporate a means for positive
XX selection. Where the host organism is not a T. thermophila mutant
XX containing the Btul-1K350M allele, Btul::neol construct, which
XX substitutes the coding region of the neol gene (conferring resistance to
XX paromomycin) for that of BTUL, can be used to generate Btul gene knockouts
XX and for positive selection. Heterologous nucleic acids (especially
XX encoding antigenic polypeptides) can be inserted into a BTU gene for
XX successful cell-surface expression that is maintained by way of negative
XX selection. Preferred expression vectors disrupt the Btul-1K350M gene by
XX homologous recombination-mediated insertion of a heterologous nucleic
XX acid, thereby restoring resistance to paclitaxel in the resulting
XX transgenic host. Transgenic ciliated protozoa are useful as live vaccines
XX for stimulating an immune response in a vertebrate. The transgenic
XX protozoan host cells are also useful for producing polyclonal antibodies
XX (claimed). In particular, Tetrahymena expressing Ichthyophthius

CC multifiliis immobilization-antigen (i-antigen) protein on their surface
CC are effective vehicles for vaccination of freshwater fish against
CC infection by I. multifiliis.
XX
XX Sequence 1326 BP; 371 A; 252 C; 252 G; 451 T; 0 other;
SQ
Query Match 17.8%; Score 251; DB 21; Length 1326;
Best Local Similarity 56.6%; Pred. No. le-45;
Matches 659; Conservative 0; Mismatches 395; Indels 111; Gaps 6;
QY 344 GTGTTAATGTTGAGATTAAATTTTATATGAAATGCTCCAAATTTTAAATGACAGTGCTA 403
DB 167 GTGCTGCTTAAGGAGAAGCTAATGTAATTAACCTTTCCGACGAAATATGCTCTAGAG 226
QY 404 GTACATGTCACAGCTTGTCCGGTAAACAGAGTTGGTGTGCATTGACTGCTGGTAAATCCG 463
DB 227 GTATAATGTTACCATGCCAATTAACAGAGTAGGCTCTGTTACCAATACAGGTGACTTAG 286
QY 464 CTACCATAGTCGCATAATGTAACGTCGCATGTCCTACTGGTACTGCGACTTGCATGATGAG 523
DB 287 CTACTTTAGCCACATAATGCAGTACTTAATGTCTTACTGGCAGTGCATCTGATGATGAG 346
QY 524 TAATCTACTGATGTTAGATCATTCACAGAAATGTTTAAATGTAGACTTAACCTTTTACT 583
DB 347 TGACAGATGTTTTGTATAGATCAGCGGATATGTTTAAATGCAACACCTAACTTTTACT 406
QY 584 ATAATGGTAATATGTAATCTCTTTTCAATCCAGGTAAAGTTTAATGCACACCTTGTG 643
DB 407 ATAAATGGTGTCTCTCTTAAGGTGAAGCTCTCTGGGCTTTAAGTTTTTGTGCTGGTGTG 466
QY 644 CGCAATTAACCTGCT-----AAATG 664
DB 467 CCGCTGCAGGTGTTGCTGCCGTTACTAGTTAATGTGTACTTTGCCAATTAACAAAAAG 526
QY 665 TTGCTTAAGCTACTTTAGGTAAATGATGCTACAATAACCGCATTAATGTAACGTTGATGCC 724
DB 527 ATTCTCTGCCACTGCAGGTGCTTAAGCTAAATTTAGCCACATAATGTAGCAATTAATGTC 586
QY 725 CTGATGGTACTATAAGTGTGCTGGAGT---AAATTAATTTGGGTAGCACAAAACACATGA 781
DB 587 CTACTGGCACTGTACTTGTATGATGGAGTGACACTTTGTTTAAATACATCAGCCACATAT 646
QY 782 GTACTAATTTGCTCTCTTAACCTTTTACAATAATTAATCTCTCTAAT-----826
DB 647 GTGTTAATGCAGACCTAATCTTTTACTATAATGTTGTTCTCTCTTAAGGTGAAGCTCTG 706
QY 827 -----TCAATCCAGGTAAATAGTACAT 847
DB 707 GCGTTTAAGTTTTTGTGCTGGTGTGCTGCCGCTGCAGGTGTTGCTGCTACTAGTTAAT 766
QY 848 GCCTACCTTCCCAGCAAAATAAAGATTATGTTGCTGAAGCCACTGCAGGTGGTCCGCTA 907
DB 767 GTGTACCTTGGCAATAAACAACAAACGATTTCTCT---GCCACTGCAGGTGCCAAGCTA 823
QY 908 CTTTAGCCAAATAATGTAATTTGCAATGCCCTGATGTAATGCAATGCTAGTGGAGCA 967
DB 824 ATTTAGCCACATAATGCAATGTAATGTTCAACTGCACTGCAATTAAGACGAGAGTGA 883
QY 968 CTAATATGTAATATATAACACAAATGCTTAATGTTGCTGCTAACTTTTATTTTATG 1027
DB 884 CACTTGTGTTTGTAGTAATTCATCCACATAATGTTCTTAATGCATGCTAATTTTATTA 943
QY 1028 GTAATAATTTCTAGCAGGAAGTAGTAGTCAAGCATGTCCAGCAATAAATAGTTTAAG 1087
DB 944 ATGGTAATTTGCAAGCAGGTAAAGTTAATGTTTAAAGTGTCCAGTAAGTAAACACT---A 1000
QY 1088 GCGCTGTAGCAACGTCAGGTGTTGCTACTTCTACTTTAATGTCATATGTCCTTTGAATGCC 1147
DB 1001 CTCACGACATGCTCCAGGTAAATGCTACTTAAGCCACATATGTTTACACCATGTC 1060
QY 1148 CTGCTGTACTGTACTCCAGCATGCAACATCTACTTATAAATAAGCAGCATCTGAAT 1207
DB 1061 CTGCTGGTACAGTACTTGTATGATGAACATCACTAATTTTGTAGCTTCCGCAACTGAAT 1120

CC I-antigens or immobilisation antigens are common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kb. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 123 BP; 25 A; 37 C; 39 G; 22 T; 0 other;
Query Match 4.8%; Score 68.2; DB 21; Length 123;
Best Local Similarity 72.7%; Pred. No. 8.5e-06;
Matches 88; Conservative 0; Mismatches 33; Indels 0; Gaps 0;
QY 431 GAGTTGGTGGTACGATGACGCTGGTAATGCGCTACCATATGCGTAATGTAACGTCG 490
DB 122 GCGTGGGAGGAGCTGTGACGCTGGAACGCTGTACCATCTGGCTCAGTGTAAACGTCG 63
QY 491 CATCTCTACTGCTACTGACCTGATGATGGAGTGGAGTAACTACTGATTTAGATCATTTCA 550
DB 62 CTTCTCTACCGGAACCGCTCTGGACGAGGAGTGGACCGACCTACGTCGCTCTTTCA 3
QY 551 C 551
DB 2 C 2
RESULT 13
AAA97072/C
ID AAA97072 standard; DNA: 104 BP.
XX
XX AAA97072;
AC AAA97072;
DT 18-DEC-2000 (first entry)
XX G5 synthetic gene synthesis primer 3202.
DE
DE Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
XX Synthetic.
OS
OS WO200046373-A1.
PN 10-AUG-2000.
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.
XX
XX (UYGE-) UNIV GEORGIA RES FOUND INC.
PA (CORR) CORNELL RES FOUND INC.
PA (CLAR/) CLARK T G.
PA (DICK/) DICKERSON H W.
PA (LINT/) LINT T.
XX

PI Clark TG, Dickerson HW, Lin T;
XX WPI; 2000-506071/45.
XX Novel i-antigen polypeptides and polynucleotides from Ichthyophthirius
XX multifiliis, useful for prophylaxis and treatment of Ichthyophthirius
PT infection in fish
PT
PT Disclosure; Figure 12; 144pp; English.
PS
XX This invention relates to novel i-antigen polypeptide sequences.
XX I-antigens or immobilisation antigens are common to a variety of
CC hymenostomatid ciliates and their expression varies in response to
CC environmental stimuli. This invention relates to i-antigens in
CC Ichthyophthirius multifiliis, a protozoan which is an obligate parasite
CC of freshwater fish causing ichthyophthiriasis or white spot disease. The
CC invention includes two polypeptide and polynucleotide sequences for two
CC i-antigens, of 48 and 55 kb. Also included in the invention are
CC antibodies capable of binding to the nucleotide sequences and a method
CC for identifying I. multifiliis serotypes using the nucleotide sequences.
CC A composition (containing the i-antigen nucleotide) capable of eliciting
CC an immune response in fish is useful for prophylaxis, treatment or for
CC controlling I. multifiliis infection in fish. Polynucleotide or protein
CC vaccines comprising a portion of the amplified product encoding an
CC antigenic i-antigen polypeptide obtained in fish. Sequences AAA97036-A97042,
CC and AAA97060, AAA97065 and AAA97089 represent i-antigen genes and gene
CC fragments identified in the invention. Sequences AAA97043-A97064
CC (excluding AAA97060) and AAA97071-A97088 represent primers used in the
CC isolation of the i-antigen gene sequences. Sequences AAB25859-B25889 and
CC AAB25893-B25906 represent i-antigen protein and peptide sequences.
XX
SQ Sequence 104 BP; 21 A; 27 C; 30 G; 26 T; 0 other;
Query Match 4.7%; Score 66.2; DB 21; Length 104;
Best Local Similarity 77.7%; Pred. No. 2.2e-05;
Matches 80; Conservative 0; Mismatches 23; Indels 0; Gaps 0;
QY 85 ACTAACACACCGGATAAGTTGATGATCTAGGACTCTCGCAATGCTTAATGTTAG 144
DB 103 ACCAACACCGCTGGACAGGTGGACGACCTGGGAACCCCTGCTAATGCTGACCTGTCAG 44
QY 145 AAAAATTTTATTATATAATGCTGCTGCTTTCTTCCTCGGTG 187
DB 43 AAGAACTTCTACTACACACGCTGCTGCTTCTGCTGCTGGAG 1
RESULT 14
AAA97073
ID AAA97073 standard; DNA: 100 BP.
XX
XX AAA97073;
AC AAA97073;
DT 18-DEC-2000 (first entry)
XX
XX G5 synthetic gene synthesis primer 3203.
DE
XX Immobilisation antigen; i-antigen; ichthyophthiriasis; vaccine;
KW white spot disease; freshwater fish; immune response; infection control;
KW PCR primer; ss.
XX
XX Synthetic.
OS
XX WO200046373-A1.
PN 10-AUG-2000.
XX
XX 04-FEB-2000; 2000WO-US02962.
XX
XX 04-FEB-1999; 99US-0118634.
PR 02-MAR-1999; 99US-0122372.
PR 17-MAR-1999; 99US-0124905.
PR 27-APR-1999; 99US-0131121.

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